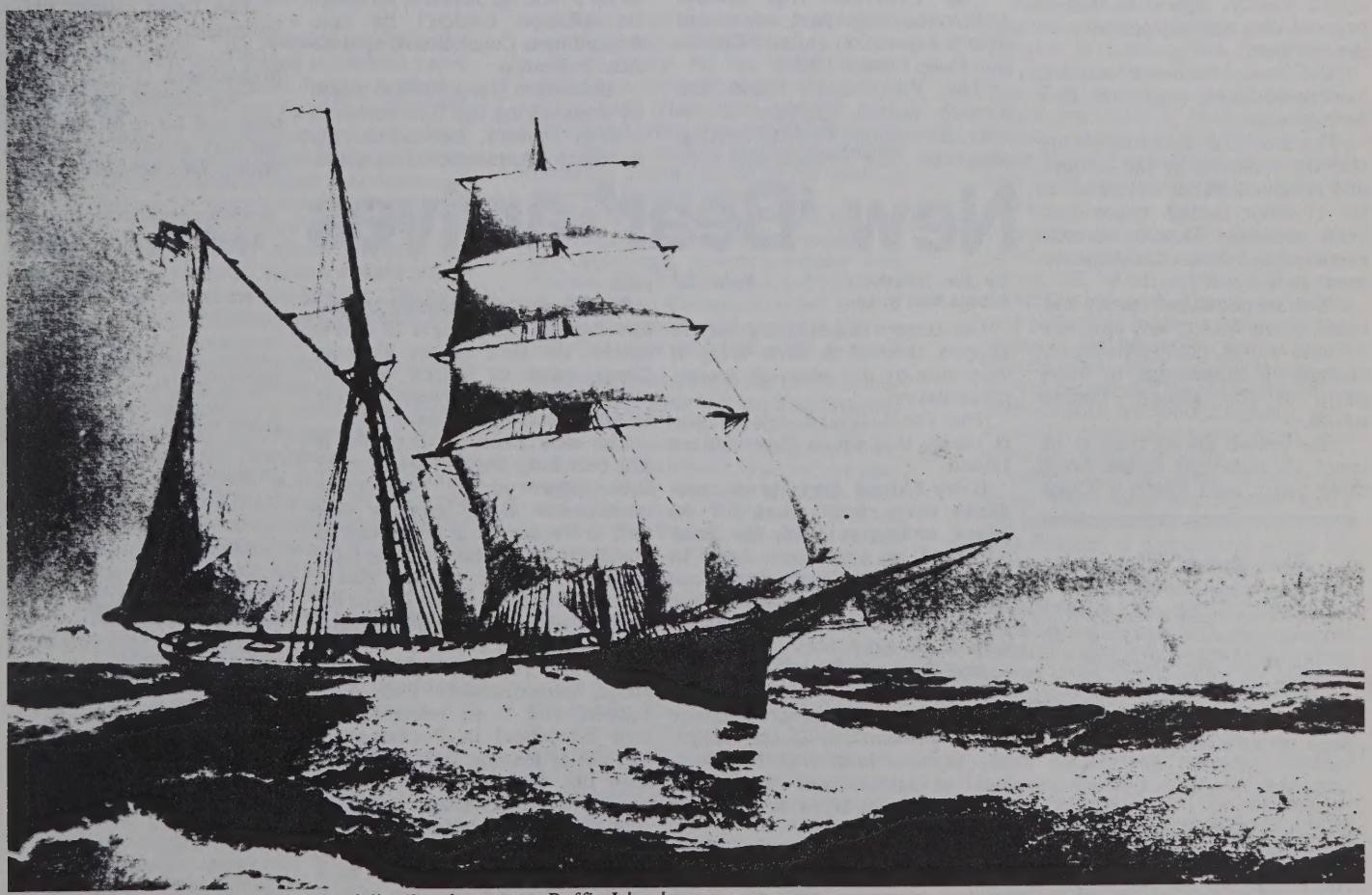
THE POLAR TIMES



The 'Germania' under full sail on her way to Baffin Island.

Coast Guard ship the 7th to circumnavigate Antarctica

March 19 (AP)

Seattle — The Coast Guard icebreaker Polar Star has sailed around the bottom of the world, supplying U.S. stations in the Antarctic and inspecting foreign outposts, including the Soviet Union's.

Word of the 69-day trip reached the icebreaker's home port in Seattle recently and was released by the Coast Guard Friday.

The Coast Guard said only seven ships have ever circumnavigated Antarctica, according to the U.S. National Archives and Records Service in Washington, D.C. Capt. James Cook was the first to do it when he accomplished the feat in 1795.

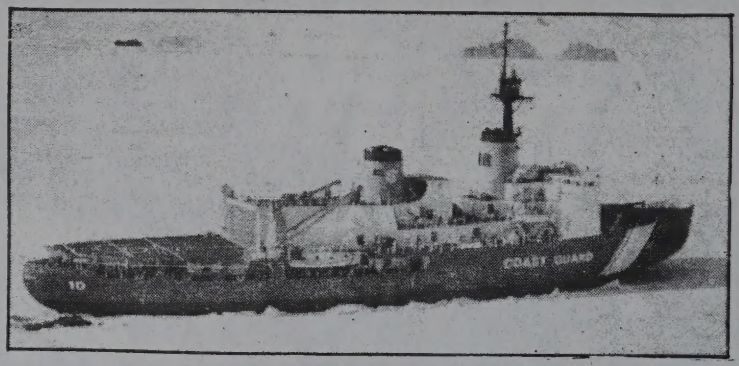
During the trip through the icebergs, a special team of U.S. State Department observers visited 12 foreign research stations to verify compliance of the Antarctic Treaty, signed in 1959 to prevent any military activity on the continent.

The Soviet Union's outpost, Leningradskaya, was the first foreign stop.

The four U.S. observers were warmly received by the Soviets, and received warm welcomes at the 11 other foreign bases also, crew member Timothy Coonse reported in a Coast Guard statement on the visit.

"Station personnel openly welcome a new face of any nationality, and with it, the inevitable exchange of happenings in other parts of the globe," Coonse wrote.

The United States tries to inspect all Antarctic bases every three years, said Albert S. Chapman, the State Department's Polar Affairs Officer and head of the team.



Coast Guard icebreaker Polar Star has sailed around the bottom of the world

"There are specific items we look for on our visits," he told the Coast Guard. The team checks for nuclear weapons, the dumping of radioactive waste and fortification of stations.

The 7,773-mile trip around Antarctica was part of a six-month expedition called "Operation Deep Freeze 1983."

The Polar Star found the French station, DuMont D'uRville, surrounded by 6,000 nesting penguins. The French are conducting extensive studies of Adelie Penguins, the smaller of two penguin species found in the Antarctic.

The red-hulled Polar Star, with a crew of 165, left Seattle Oct. 19, 1982, and is due back about May 15. On Friday the returning Polar Star was scheduled to be in Rio de Janeiro, although its location couldn't be confirmed by a Coast Guard spokesman in Seattle.

Operation Deep Freeze began by resupplying the U.S. research station Palmer, located on the northern Antarctic Peninsula, near the tip of South America.

On Christmas Day the crew unloaded 350 tons of cargo and 120,000 gallons of fuel.

Next, the Polar Star broke a 30-mile path through seven-foot-thick ice to McMurdo Station, the largest U.S. base in Antarctica and the central support base for other U.S. stations there.

The Polar Star did the job in 36 hours compared with two weeks for the Coast Guard's older class of icebreakers.

On Jan. 20, the icebreaker escorted the Navy tanker Maumee through the path in the icepack.

Also on board for the polar circumnavigation was a team of scientists led by Albert Erickson of the University of Washington. The team was conducting a count of south polar seal and whale populations. His work was sponsored by the National Science Foundation.

"Before we can come down here and start taking these animals for furs and oils or whatever, we need to know how the populations stand," he was quoted as saying.

The Coast Guard called the icebreaker's operation a success. There were no mechanical breakdowns.

"We started out with a game plan and hit it on the button all the way around," said Capt. Joe Smith. "We did it all."

New 'Bear' arrives

By Jim Douthit
Tribune Staff Writer

Feb. 28

Old timers might think they've slipped through a time warp if they stop by the Alameda waterfront today.

The Coast Guard cutter Bear is there, tied up at Government Island.

Gray-haired Bay Area residents may recall that for 40 years, ending in 1926, the Bear wintered at her home base in Oakland, resting from numerous Arctic exploits that made her perhaps the most famous rescue ship of all time.

And they may recall that after she was retired from the Revenue Cutter Service, predecessor to the present-day Coast Guard, the famous ship was renamed Bear of Oakland and carried Admiral Richard Byrd to the Antarctic.

They may also recall that that Bear, the famous Bear, is gone, having sunk in 1963 off Nova Scotia while being towed to Philadelphia, where she was to be converted to a museum-restaurant.

The Bear that steamed up the Estuary Saturday night is a new cutter, the first of the Famous Class, each of which will be named for a renowned Coast Guard vessel of the past.

The new Bear, WMEC-270, is 270 feet long with a beam of 38 feet, powered by two 3,500 horsepower diesel engines that will drive her at a top speed of nearly 20 knots. She is a medium endurance cutter, able to steam 400 miles from a base, patrol for 14 days and return to base with a 10 percent fuel reserve.

She was recently built in Tacoma, commissioned Feb. 4 in Seattle, and is en route to her new homeport in Portsmouth, Va. She is leaving Oakland Tuesday, but will welcome visitors aboard this afternoon.

She is loaded with innovative electronic and computer systems and will be able to serve as a floating base for all kinds of helicopters used by the Coast Guard. She carries a ship's compliment of 99 people.

The Polar Times

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AUGUST HOWARD, Editor

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The Polar Times

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No. 96 JUNE 1983

Russian Tale of Survival in Polar Winter

By THEODORE SHABAD

THE Soviet Union, ending a yearlong silence, has revealed how 20 scientists and technicians at a research station deep in the Antarctic survived 227 days in the polar winter after a fire had destroyed their life-sustaining diesel power plant.

The near-tragedy, in which the powerhouse engineer was killed in a vain attempt to save the diesel units, was disclosed in interviews published in the Soviet press while the survivors were recovering from their ordeal on their way home aboard an Antarctic expedition ship, the passenger liner Bashkiriya. They reached the Black Sea port of Odessa on March 13.

The incident occurred at the Vostok station, halfway between the coast and the United States outpost at the South Pole. Vostok is one of seven Soviet stations in Antarctica, and the place with the lowest recorded temperature on the earth, 127 degrees below zero Fahrenheit, in August 1960.

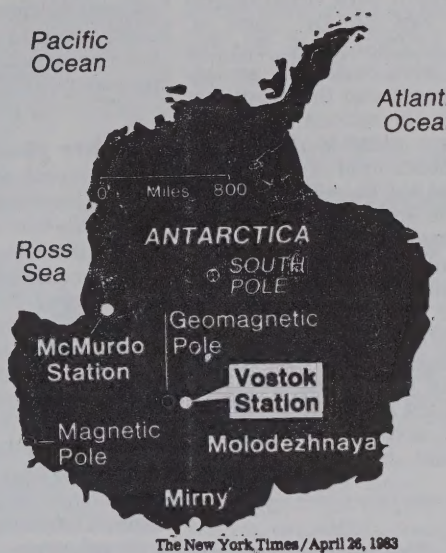
Since the station was founded in 1957, the Soviet crews have been joined in various years by scientists from the United States, Australia, France, East Germany and Czechoslovakia. No foreigners were at Vostok during the 1982 winter season. The following details could be pieced together from the published Soviet interviews:

On April 12, at 4 o'clock in the morning, Sergei Kuznetsov, a mechanic, was awakened in his quarters by the smell of smoke. Through the window, in the gray dawn, he saw a black plume curling skyward from the powerhouse. The temperature outside was 75 degrees below zero, with a strong wind.

The scientists, roused from sleep, were unable to control the unusually smoky blaze, and they lost not only the station's three main diesel units, but also all the standby generators, which had been placed in the powerhouse. Fire extinguishers did not function in the numbing temperature and no smoke masks were at hand. The blaze was apparently an electrical fire that had been set off by a short circuit when the insulation of wires cracked in the dry Antarctic air.

For a while, the flames seemed to threaten the fuel stores, but these were saved by a change in wind direction. It was all over in 15 minutes. The only fatality was Aleksei Karpenko, an engineer, who had entered the burning structure in a desperate attempt to save the power supply, but was overcome by smoke and heat.

It was the onset of the winter night in the Antarctic, where seasons are the reverse of those in the Northern Hemisphere. The last regular supply plane, a ski-equipped IL-14, had left for Molodezhnaya, the Soviet Antarctic headquarters on the coast, in late February. But it had to return in March on an emergency airlift, risky this late in the season, to evacuate a Vostok physicist who had been felled by acute mountain sickness in the rarefied air of the station, which is on an ice plateau at 11,440 feet.



The New York Times / April 26, 1983

Now, except for the radio, Vostok would have no contact with the outside world until November, when a tractor-sledge train was scheduled to arrive on its annual resupply mission from the Mirny station on the coast, a six-week journey away.

With power, heat and lights out and the temperature dropping rapidly in the buildings, prompt action was needed. The Vostok crew, led by Pyotr G. Astakhov, the station chief, moved perishable goods and provisions into a hut that was supplied with a small kerosene heater, and the 20 men doubled up on bunks in three small rooms.

The first priority was to re-establish radio contact. Molodezhnaya had failed to raise Vostok in any of the four regular daily sessions, and was puzzled and worried. It was only late on April 12 that Vostok was able to crank up a worn-out old diesel engine used in an ice-coring project. It barely worked, but Molodezhnaya made out the faint dash-and-dot signals: "Trouble with diesel power plant. Must keep this session short. Over and out."

The next day, Mr. Astakhov radioed the details. The news was passed on to the Arctic and Antarctic Institute in Leningrad, the expedition sponsors, but no word was made public. Emergency relief plans, including the possible dispatch of a heavy cargo plane from the Soviet Union to attempt an airdrop at Vostok, were discarded as too risky in view of the polar night, high winds and low temperatures. It was, incidentally, only in the last two years that the Military Airlift Command of the United States Air Force, with bases closer by, first successfully carried out single-mission midwinter airdrops at two American stations, McMurdo and South Pole.

At Vostok, power was essential to prepare food in the electric kitchen and to thaw snow as a source of water. Over two months, mechanics patched up a second scrapped diesel unit that had been left in cold storage. But there was always a shortage of power, and care had to be taken to prevent overloads.

A minimum supply of heat was provided by candlelike devices consisting of wicks dipped in diesel fuel. The wicks, twisted partly out of asbestos fiber, gave off clouds of soot because of incomplete combustion for lack of oxygen in Vostok's rarefied atmosphere. For some time after being relieved in December, the faces of the Vostok men were to remain lined with carbon particles embedded in the skin.

Temperatures just around the primitive heating devices were a comfortable 70 to 80 degrees, but dropped off rapidly to below zero beyond 8 or 10 feet. The abrupt gradient caused the aluminum walls of Antarctic huts to buckle. Because of the danger of fire from the precarious heaters, a watch had to be kept over them around the clock.

Despite the adverse conditions, the crew managed to continue some meteorological observations and other scientific research. The site of Vostok was picked by the Russians in 1957 because of its proximity to the South Geomagnetic Pole, which marks the axis of the earth's magnetic field. It is distinct both from the magnetic pole, to which compass needles point, and from the geographic pole.

Vostok has also been conducting a deep ice-drilling experiment under the International Antarctic Glaciological Project, a cooperative effort involving Australia, Britain, France, Japan, the Soviet Union and the United States. Starting in 1979, crews have been drilling a hole, now near the 7,000-foot mark, to study deep-seated layers of ice and trapped air bubbles for indications of past temperatures, atmospheric phenomena and other signposts of the earth's history. Last year, despite the makeshift power supply, the ice-coring project advanced 270 feet.

The ordeal finally ended when the annual tractor-sledge train from Mirny arrived Nov. 23 with a spare diesel generator, as well as fuel, supplies and provisions. A new power plant was promptly put into operation, and this time the standby units were carefully stored some distance away. A bitter lesson had been learned.

Fossils give clue to Antarctica past

Associated Press

Washington — A new look at some old rocks has produced a surprising cache of small fossils that scienticts say could redefine the glacial history of Antarctica.

The wide variety of ancient marine fossils were discovered in rock samples from throughout the longest mountain range in Antarctica and scientists said Wednesday that the find may change current thinking about ice movement on that continent.

The microscopic fossils, which range in age from 2 million years to 70 million years old, were in sediments gathered along 1,000 miles of the 1,900–mile-long Transantarctic Mountain range, the National Science Foundation announced.

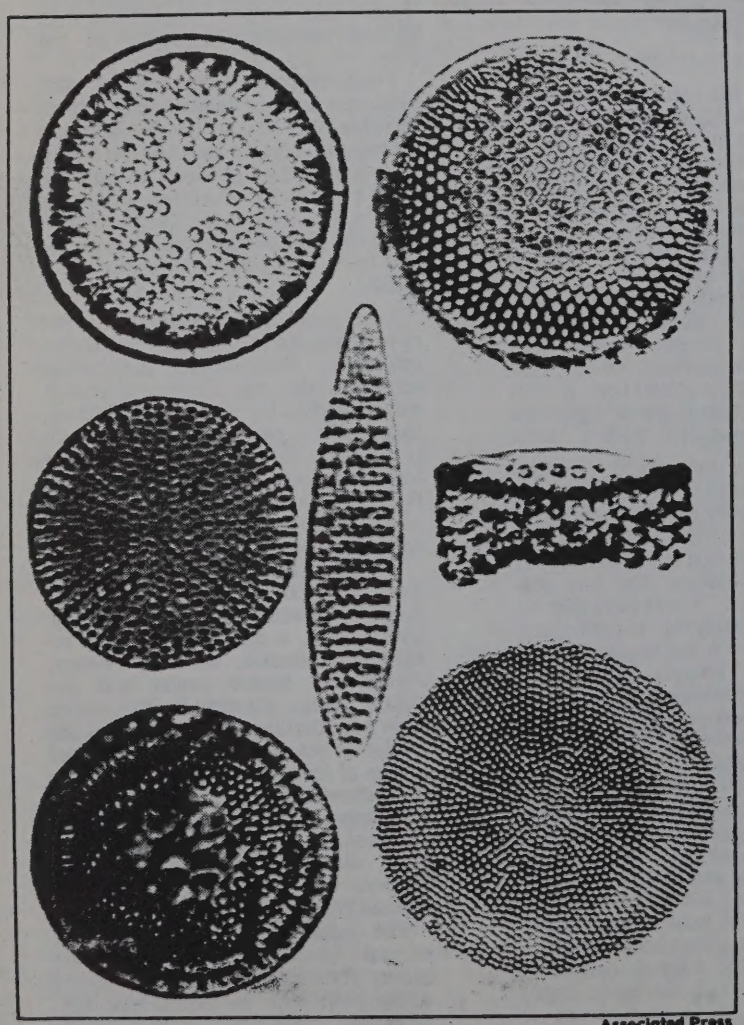
The sediment samples in which the fossils were found were brought back from Antarctica in 1964 by Dr. John H. Mercer of Ohio State. But the samples were studied for geological purposes and the small fossils were not noticed until a recent re-examination, Webb said in a telephone interview.

"We've had the samples for 20 years, I'm embarrassed to say," he continued, "but we only recently looked at them for microfossils and were amazed by what we found.

"The presence of these microfossils suggests that over many millions of years large areas of the vast East Antarctic Ice Sheet expanded across the East Antarctic land mass, overlapped major mountain chains and extended across the continental shelves," Webb said.

During periods of glacial recession, he said, shallow seas apparently were formed across large areas of the continent.

Webb said most of the fossils probably were carried up the mountains in the bottom few hundred feet of glaciers thousands of feet thick. These fossils probably were scooped up from faraway interior basins as the ice sheets passed by.



Associated Press

Rocks collected in Antarctica 20 years ago are loaded with fossil evidence

Another piece of the puzzle

An Antarctic expedition has discovered the jaw bones and teeth of ancient marsupials that lived 50 million years ago — providing the first evidence that mammals once inhabited the frozen continent. The find, called "one of the most significant scientific discoveries in recent years" by the National Science Foundation, was made last March on Seymour Island at the northeast tip of Antarctica, said expedition member Sankar Chatterjee of Texas Tech University.

Chatterjee said Michael P. Woodburne, a marsupial expert and vertebrate paleontologist at the University of California, instantly recognized the three jaw bones and attached teeth as belonging to the ancient mammals. The bones, dated 50 million years ago, belonged to an extinct, berry-eating marsupial species called Polydolopus, he said. The remains were similar to those of marsupials known to have lived in South America at the same time.

Chatterjee said the discovery last March enhances the theory of continental drift, which contends that the earth's continents were once connected. According to the theory, the southern continents of Australia, South America and Antarctica were connected about 50 million years ago in the Ecoene epoch.

Marsupials, which include koalas, opossums and kangaroos, carry their young in an external pouch, rather than a womb, until they mature. Experts believe the animals migrated to Australia from the north through the East Indies from their place of origin in the Americas. Chatterjee said the find indicates the marsupials got to Australia by crossing Antarctica when it was warm and habitable.

The expedition also produced evidence of the first mossasaur, a marine lizard that lived 70 million years ago, the fossil bones of a giant, 6-foot-tall penguin, skeletons of large marine reptiles and the first evidence of bony fishes of the late Cretaceous period.

Chatterjee said the discoveries should present an accurate picture of animal and plant life on the continent before the onset of glacial conditions. "You can see the extinction on this small island," he said. "On one side of the island, there are large, prehistoric reptiles and on the other side, only smaller, later animals."

He also said the island presented a unique place in which to study the theory that meteorites crashing into the Earth caused the demise of the giant animals.

Messages from Mars

After the age of reason dawned in 18th-century France, the Académie Française, seeking to combat the absurd notion that meteorites fall from the sky, ordered museums to throw out their collections. Fortunately, new collections have since been assembled, and recently a treasure-trove of meteorites has been discovered — in Antarctica of all places. All fell from the sky, some perhaps from as far as the moon and Mars.

Meteorites that fall in Antarctica are carried along in the ice sheets and usually launched in icebergs when the sheet meets the sea. But some sheets are halted by mountains and eaten away by harsh dry winds. The embedded meteorites collect at these erosion sites, as pristine as when they first fell thousands of years ago.

The oldest meteorites are as old as the Earth, yet contain amino acids, basic chemicals of life, even though life on earth didn't appear until a billion years later. Oddities of age and composition in some younger Antarctic meteorites suggest they should have come from the moon and Mars, not the interplanetary debris of the early solar system. But the force necessary to rocket them off the surface of Mars is very hard to envisage, so meteorite mavens concluded at a recent meeting in Houston.

When the Viking spacecraft landed on Mars in 1976, it reported it could see no life, only odd-shaped rocks. When the Martians send us meteoric postcards, first we toss them out of our museums without studying them, then we refuse to believe the postmark. Those Martians must take us for moonrocks.

Q. *If it's 10 A.M. in New York and 5 P.M. in Moscow, what time is it at the South Pole? At the North Pole?*

A. When it is 10 A.M. in New York it is 3 A.M. the next day at the South Pole. That is because the only people at the South Pole with any interest in time are the personnel at the United States polar station. They use New Zealand time, which is Eastern standard time plus 17 hours, because the polar station is supported from the American base at McMurdo Sound, which in turn is supported from Christchurch, New Zealand, and it is convenient for the time to be the same at all three. The North Pole is uninhabited, so there is no one to care what time it is; of course, strictly speaking, where all the meridians that govern local time converge, as they do at the poles, there is no way of defining the time of day.

An Ancestor of Whales Appears to Have Walked

IT is hard to imagine a whale that walks, but three paleontologists believe they have identified such a transitional stage between land mammals and the cetaceans — mammalian dwellers of the deep sea.

Only the skull of this large creature has been reconstructed from fossil finds, so there are no clues as to whether it might have moved on feet or flippers. Nevertheless, authors of a report in the April 22 issue of Science believe this whale "may still have spent a significant amount of time on land."

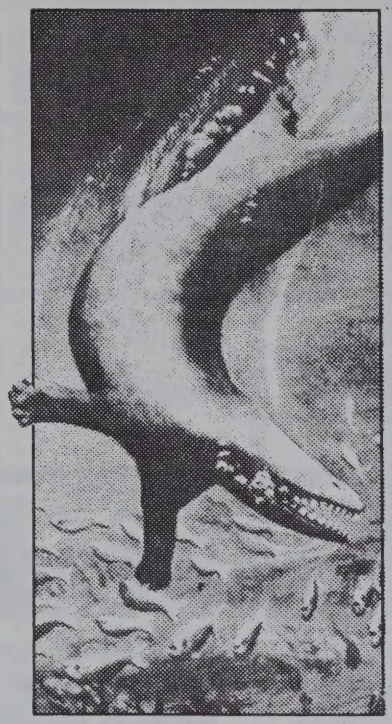
The skull shows it was clearly ancestral to modern whales and adapted to hunting fish in coastal estuaries. But bone structure related to the animal's hearing ability, in contrast to that of modern cetaceans, was not adapted to identifying the direction of a sound source in seeking prey under water.

Furthermore, the auditory system apparently could not compensate for high water pressure. Hence, these early whales would probably have become deaf on a deep dive. The hearing apparatus of this genus, designated Pakicetus (since it was discovered in Pakistan), "appears more similar to that of land mammals than it is to any group of extinct marine mammals," the report said.

The remains were found, not with deep sea creatures, but with those of crocodiles, turtles, catfish and other dwellers of shallow estuaries. The deciduous teeth found in some specimens are typical of mammals that breed and bear their young on land.

The fossils were found in the Kohat District of Pakistan in riverbed sediments of the early Eocene, more than 50 million years ago, before true whales had evolved. Pakistan and the rest of the Indian subcontinent were then drifting against southern Asia, squeezing the intervening seas into narrow waterways that, the authors believe, were teeming with life.

It was in such a propitious environment, the evidence suggests, that the whales made their fateful adaptation from walker to swimmer. The authors were Philip D. Gingerich and Neil A. Wells of the University of Michigan, Donald E. Russell of the National Museum of Natural History in Paris and S.M. Ibrahim Shah of the Geological Survey of Pakistan.



Science/Karen Klitz

Whales that walked may have served as the transition between land mammals and sea dwellers.

The New York Times/May 3, 1983

Island Reported Melting

After more than 36 years of wandering in the Arctic Ocean, Fletcher's Ice Island, used for a quarter of a century as a research station, appears destined to melt. The "island" — a flat slab of glacial ice almost as large as Manhattan — is no longer occupied and for half a year, until this month, its whereabouts had been unknown.

It has now been spotted about 150 miles from the North Pole and close to the international date line by a plane of the National Oceanic and Atmospheric Administration.

According to Dr. Joseph O. Fletcher, a climate researcher for whom it was named, the island is now caught in the circumpolar current that "almost certainly" will sweep it into the North Atlantic, where it would inevitably disintegrate.

The island is believed to be a detached section of the Ellesmere Island ice shelf. It was one of three drifting radar targets spotted by aircraft in 1947 and was known by its target designation T-3 until 1952 when Dr. Fletcher, then an Air Force colonel, landed there with two companions. They set up a drifting station for weather and other observations during the International Geophysical Year of 1957-58.

If Rocks Came From the Moon And Mars, How?

After several years of laboratory tests, scientists last week confirmed that a meteorite found in the Antarctic in 1982 is a piece of the Moon. For the first time, scientists had pinpointed a meteorite's place of origin. That, however, left astronomers with a daunting challenge — explaining how the meteorite got here.

"It is clearly lunar," said Dr. Klaus Keil of the University of New Mexico, one of the researchers who analyzed what looked like a greenish-brown golf ball. Dr. Keil and his colleagues said the meteorite resembles rock samples brought from the Moon by Apollo 16 astronauts.

The fragment, scientists say, has provided the first incontrovertible proof that not all meteorites derive from asteroids or burned-out comets, as was popularly believed, and that objects born of large bodies in the solar system can make their way to Earth. It thus reinforces the growing belief that two other meteorites, found in Antarctica in 1979, came from Mars. Geochemical evidence for their Martian origins was presented last week at a Lunar and Planetary Conference at the Johnson Space Center.

How could such meteorites have been broken from their parent bodies and propelled to Earth? One promising theory is that an asteroid hit the parent body with such force that it tore out rocky fragments. An asteroid's impact could turn Martian permafrost (permanently frozen ground) to steam, which in turn could help propel the fragments to velocities that would break the hold of gravity. The Moon has no permafrost, nothing that would give fragments the added "oomph" to blast off and out from the surface. But then the Moon has low gravity and no atmosphere from which a meteorite must break loose.

Finding meteorites in Antarctica is not unusual. The ice and cold preserve the rocks and protect them from erosion. Moreover, the pressure of ice and snow creates a kind of plastic envelope around a meteorite and pushes it toward the Antarctic coast along a subterranean conveyor belt. Many meteorites are pushed into the sea. But mountains stop others in their tracks, allowing the wind to expose them to the alert passer-by.

New Meteorite Bonanza

In 1969 Japanese glaciologists stumbled upon an extraordinary concentration of meteorites on top of the ice south of the Yamato Mountains of Antarctica. Apparently, for thousands of years the ice had collected all the meteorites that fell on it. When the ice flow was stalled by mountains, erosion exposed even deeply buried meteorites.

Since then, American scientists have found meteorites on ice west of McMurdo Sound on the opposite side of Antarctica. Now some have been found in a completely new area 1,000 miles from the main American base at McMurdo Sound, facing the Weddell Sea and, beyond it, the Atlantic.

According to an announcement by the National Science Foundation, based on a radio message from the field, 28 of the 31 new specimens are carbonaceous chondrites — probably the most sought-after of all types of meteorites. They are rare because, with a consistency like hard-packed clay, they cannot survive long in a rainy climate.

In the Antarctic they are quickly buried by snow and protected until stalling of the ice brings them back to the surface. Such meteorites, rich in carbon compounds, are thought to represent early stages in the chemical evolution that ultimately led to the appearance of living organisms.

Whale count stays steady

Associated Press

Juneau — More cruise ships will sail the waters of Glacier Bay, if the humpback whale population remains stable, according to a National Marine Fisheries Service opinion accepted by the National Park Service.

The study, which took two years of research and analysis, states that it is justifiable for up to 20 percent more cruise ship traffic to visit Glacier Bay if the whale population stays at the 1982 level of about 20 whales.

Continued monitoring of the humpbacks also is recommended.

Whale quota accord reached

Eskimo whalers and the federal government have agreed on a quota of 18 bowhead whales for the 1983 harvest, the Alaska Eskimo Whaling Commission says.

The commission and the National Oceanic and Atmospheric Administration also agreed to negotiate by April 8 a quota for 1984. The commission said it hoped that quota could be raised to between 25 and 45 bowheads.

"We are pleased with the results of these negotiations," said Roger Silook, chairman of the commission.

The quota agreed to for 1984 will be the basis for the U.S. position before the International Whaling Commission when the body meets in England in July.

USGS symposium celebrates triple polar anniversary

The U.S. Geological Survey (USGS) will sponsor a public symposium to celebrate the 100th and 50th anniversaries of the First and Second Polar Years and the 25th anniversary of the International Geophysical Year. Organized at the urging of the International Council of Scientific Unions and the Geophysical Research Board of the National Academy of Sciences, the symposium will be held from 12 to 14 October 1983 at the National Academy of Sciences in Washington, D.C.

The program will focus on research by USGS scientists in the Arctic and Antarctic. Topics to be discussed include energy and mineral resources, geology, geophysics, glaciology, and cartography. USGS has solicited papers from scientists who are or have been employed by the agency.

Additional information is available from the assistant director for research, U. S. Geological Survey, Reston, Virginia 22092; telephone 703/860-7480.

Exhibit at Texas Tech University Museum

The Texas Tech University Museum is preparing a permanent exhibit, "Antarctica, the white continent," which will be a tribute to scientific accomplishments on the world's most isolated continent. The museum has a long association with antarctic research, beginning in 1933 when F. Alton Wade made his first trip to Antarctica as a member of the second Byrd Expedition. The exhibit is scheduled to open in February 1985. Scientists interested in contributing material for display should contact Dr. Sankar Chatterjee, Director, Antarctic Research Center, Texas Tech University Museum, Box 4499, Lubbock, Texas 79409, (806)742-1968.

Midwinter airdrops at McMurdo and South Pole stations

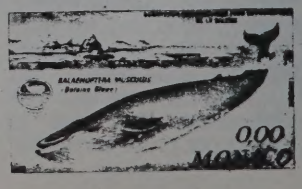
For the second consecutive year the U.S. Air Force Military Airlift Command successfully completed a single-mission, two-location airdrop of cargo and mail at McMurdo and South Pole Stations. Despite high winds that lowered the temperature below -78.9°C, a C-141 airplane dropped 40 containers, weighing 23,984 pounds, at Williams Field, the ice runway near McMurdo Station on 22 June 1982. From McMurdo Station the airplane flew on to the South Pole. Seven containers, weighing 3,013 pounds, were dropped near South Pole Station, where the temperature had dropped to -81.7°. Ground crews at both stations successfully recovered all of the containers, although one container was slightly damaged in the drop at South Pole Station.

Except for radio communication, the airdrops were the only contact that station personnel have had with the outside world since the stations began winter operations in February (South Pole) and March (McMurdo).

South Pole record low temperature

On 23 June 1982 wintering personnel at Amundsen-Scott South Pole Station recorded a new low temperature: -82.8°C (-117.4°F). This low, recorded under clear skies with a light wind blowing, broke the previous record of -80.7°C (-113.3°F) set in July 1956.

As cold as it was at South Pole Station, this temperature was not the lowest ever recorded in Antarctica. On 24 August 1960, scientists at the Soviet station Vostok—about 1,400 kilometers inland—reported a low temperature of -106°C (-127°F).



Innes-Taylor dead at 83

The Whitehorse Star,
January 14, 1983

One of the last great men of the North died in his sleep this morning in Whitehorse.

Alan Innes-Taylor, who would have been as old as this century next month, squeezed several lifetimes of adventure and experience into his 82 years. He was best known as an expert on arctic survival techniques, and his experience in that field was considerable.

He helped build a weather station in Canada's high arctic. He was dog master on two of Admiral Byrd's Antarctic expedition and was awarded a Congressional medal by the U.S.

He was also the Arctic Institute of North America's official representative in the Yukon.

British-born Innes-Taylor came to Canada in 1906 and settled with his parents in brother in Ontario. He first came to the Yukon in 1919 to join the North West Mounted Police, which soon after became the RCMP. He left the RCMP after five years to spend three years as a purser on the sternwheelers plying the Yukon River and dabbled briefly in mining, working at the Tredwell Yukon Mining Company in Keno Hill.

In the 1930's Innes-Taylor accompanied Byrd to the Antarctic and, while still retaining his Canadian citizenship became a Lt.-Colonel with the American army during World War II. He taught arctic survival courses during the war and later to airline crews. He was awarded several medals by a grateful U.S. government.

He also spent one winter in Jasper, Alberta training a Highland fighting unit, the Lovett Scouts, for a proposed air drop into Norway, which didn't materialize. The Scouts instead were dropped into Italy and suffered heavy losses.

Innes-Taylor returned to Whitehorse in 1952 and settled in Whitehorse. He became the Yukon's acknowledged expert on river travel, and a consultant to the territorial and federal government.

In 1977 he was appointed a Member of the Order of Canada, and was awarded the Queen's Anniversary Medal in 1978. Last spring he was presented with a first level Commissioner's Award by Yukon Commissioner Doug Bell for his "outstanding record of service in the North, his efforts to preserve Yukon heritage and his promotion of safety in the wilderness."

Innes-Taylor also helped untold number of tourists to safely complete river trips, and the inexperience of many of these people worried him. He once commented that one of the troubles with the North today is that too many people don't know what they're doing and won't listen.

Funeral arrangements have not yet been arranged. Innes-Taylor is survived by his wife, Elizabeth, and three children.

Penguin exhibit has icy overtones

Associated Press

San Diego — The temperature drops slightly at the entrance to Sea World's new Penguin Encounter exhibit, and sounds of icy winds are piped in to give visitors — and the birds who live there — the feel of Antarctica.

The exhibit, which opens today, contains 300 penguins of six different types in a $7 million, 5,000-square-foot enclosure designed to make them think they are home at the South Pole.

The light is geared to Antarctica time, 12,000 pounds of crushed ice are spread over the rocks and floor of the exhibit each day and the temperature is maintained at 28 degrees behind a 100-foot tinted glass wall.

Schools of anchovies are dumped in every day for the penguins to eat.

Visitors will see the Adelie, Gentoo, king, emperor, rockhopper and macaroni penguins shuffling along on the ice, cavorting in their diving pool like winged mini-blimps, bumping into each other and hissing, sliding on their stomachs and, mostly, squatting on rocks.

A moving walkway will give visitors a one-minute view of the cavorting birds. Those wishing to linger can mount a viewing platfrom behind the walkway.

Most of the birds in the world's largest collection of penguins were gathered over 10 years by Sea World's bird curator, Frank S. Todd.

Some have been living in a walk-in freezer for seven years. During that time, the Hubbs-Sea World Research Institute has won honors for hatching penguins in captivity. And the Sea World bird keepers hope penguins will carry on their mating and hatching activities.

It won't be exactly like the Antartic, though. The birds won't be able to travel hundreds of miles to nesting colonies as they do in the wild. And the males won't have to endure months of starvation incubating the eggs between their feet while the mothers waddle off to the ocean to eat.

Also on exhibit is a collection of alcids, penguin-like birds of the Northern Hemisphere, which include horned, tufted and Atlantic puffins, common murres and rhinoceros auklets.

Outside is a pen of Humboldt penguins, native to the more temperate climates of Chile and Peru.

Slope sealift may break haul record

Associated Press

Nearly 30 barges full of equipment bound for Alaska's North Slope oilfields will head north this summer during the few brief weeks when the Arctic Ocean ice allows passage.

This year's total shipment is nearly twice last year's, and one of the largest on record, according to Bryan Figari, manager of Alaska operations for Crowley Maritime Co.

"Depending on how you define it, this could be considered the largest sealift ever," Figari said.

Last year, 16 barges made the trip. Next year, only 12 are tentatively scheduled. The peak was 45 in 1975, the first year of the annual sealift, he said.

But many of the barges on the initial run were only 180-200 feet long. Most of those making this year's trip are 400 feet in length, thus have more square footage and cargo capacity, Figari said.

Five or six barges will leave San Francisco in early July and join others under construction in the Seattle area. They in turn will rendezvous near Wainwright, in extreme northwestern Alaska, with a 600-foot floating saltwater treatment plant which will be towed from Korea.

Figari said Crowley plans to use almost every piece of its West Coast equipment, plus some from the Caribbean, to handle this year's trip.

Arco Alaska spokeswoman Susan Andrews said the magnitude stems from delivery of material needed to install a waterflood system, which will inject sea water in the massive Prudhoe Bay field to increase the amount of oil recoverable.

She said the sealift also will provide the utilities portion of a production facility at the neighboring Kuparuk field. Coupled with equipment scheduled for delivery in 1984, the facility will enable production from Kuparuk to double from its current level of 100,000 barrels a day.

Arctic ants discovered

Fairbanks — The northernmost settlement of ants on the North American continent have been found. They are in the northern foothills of the Brooks Range, along the Dalton Highway, 73 miles south of Prudhoe Bay.

PARADE MAGAZINE • JUNE 5, 1983 •

Dr. Michele Raney at South Pole. Sign lists names of those who've served—and how many miles away it is to their hometowns.

Women Who Conquer The South Pole

BY MICHAEL SATCHELL

SINCE THE DAYS OF THE EARLY POLAR EXPLORERS—Shackleton, Amundsen, Scott, Peary and Byrd—Antarctica has been laced with the lore of heroism. The world's southernmost extremity has been viewed as a challenge to masculine strength, courage and endurance.

In the minds of many, Antarctica still is one of the last macho redoubts, where men are men and women are superfluous. But times are changing on the South Polar ice cap, as they are elsewhere around the globe. Antarctica today hasn't exactly flowered with femininity, but its "For Men Only" sign definitely has come down.

"We've only been allowed to work down here for a little more than 10 years," says Dr. Gisela Dreschhoff, "but we've proved ourselves over and over again."

Dr. Dreschhoff is typical of the type of woman who comes to Antarctica to contribute. An assistant professor of physics at the University of Kansas and a widely respected scientist, she and a woman associate once spent seven hours working outdoors at the South Pole on a day when the temperature was 30 below zero and a 30-mile-an-hour wind pushed the chill factor even lower. After hauling their equipment back to the station, they were warming themselves with coffee in the galley when two construction workers flopped down at a nearby table. The men had been outside for 20 minutes and were forced to call it quits—because it was too cold.

The U.S. Navy kept women off Antarctica until 1969, often citing the argument that sanitation facilities were too primitive. It finally relented under pressure and allowed four women scientists to spend

a few weeks in a field camp near McMurdo Station, the principal base, 800 miles from the Pole. The event drew headlines such as "Powderpuff Explorers to Invade the South Pole."

Women wintering over on the ice was another matter, and it wasn't until 1974 that the authorities finally tiptoed into the issue and permitted two women

The 20-1 male-female ratio can be a confusing experience

—a nun and a middle-aged biologist—to spend an entire year at McMurdo. In 1979, Dr. Michele Raney, then 27, became the first woman to winter over at the South Pole Station.

Today, growing numbers of women scientists and students come here for the summer months, female Navy personnel have integral roles in transport and supply, and others looking for adventure hire on as cooks, drivers, janitors, office workers, carpenters, electricians and heavy equipment operators. The two women currently at the Pole are Loreen Utz of Herndon, Va., a scientist for the U.S. Geological Survey, and Mary Vickers of Coldspring, Ky., a virologist. They are due to leave in November after 12 months at the station.

This year, the U.S. will spend about $80 million supporting a variety of scientific research. During the summer—October through February—some 1000 Americans live and work on the continent. During the perpetual twilight and darkness of the eight-month austral winter, when temperatures regularly plunge below minus 100 degrees F, only about 100 persons man the four U.S. stations, essentially trapped and unreachable even for the most dire emergency.

Most of the women spend the four summer months in McMurdo, an untidy sprawl of about 130 buildings, dirt streets and tangled utility lines reminiscent of an early boomtown thrown up overnight over a field of Texas crude or Yukon gold. Plunged into McMurdo's mining camp atmosphere with bars as boozy as a Last Chance Saloon, the 20-1 male-female ratio can be a confusing experience.

"It makes your head spin, all this attention from all these men," laughs Marilyn Woody of San Juan Capistrano, Calif., who spent a year in McMurdo as an office worker with a construction crew. "The first time you come here, it's really flattering. Then you realize you can put a bag over your head, and they'll still fall in love with you."

For women who come here to work on science projects, life in the field can be hazardous, difficult and very uncomfortable. Six weeks in a small tent atop a glacier or frozen lake quickly winnows out armchair adventurers from dedicated scientists—male or female. The rugged existence is part of the attraction for some veterans, who tend to regard the polar regions as a sort of outdoor adventure club where women are as welcome as high heels in a billiard parlor.

Dr. George Denton, a geologist from the University of Maine, is a red-bearded, Bunyanesque figure who has a glowing reputation as a glaciologist. He roams across Antarctica's mountains and glaciers the way others putter around their gardens, and he views the growing presence of women with a tinge of regret.

"I love being out for weeks at a time," he said as we camped overnight at the foot of a glacier after bad weather forced our helicopter down. "It's a unique chance to get out with the guys, work until you're exhausted, then sit around the fire and swap yarns and tell dirty jokes. But with women along, you can't do that."

Dr. Lyle McGinnis, chairman of the geology department at Northern Illinois University, has been coming to Antarctica since 1957, and he doesn't mince words: In his view, women don't belong, at least in the field.

"Women create difficulties and problems, and I'm not sure it's worth having them along," he grumbles. "We live in small tents for months at a time. There are no days off, no time off. We work until we drop. The men never grouse. But with women, there's always something. They like their comfort. They think life in the field should be civilized. It isn't."

The women disagree. Dr. Dreschhoff, for one, regards some of her male colleagues as only too eager to keep females off the continent.

"George Denton considers Antarctica as some sort of athletic event," she says. "And I'm angry with Lyle McGinnis. He's just being unfair to women." Adds Kathy Covert of Evergreen, Colo., an employee of the U.S. Geological Survey who spent last year wintering at the Pole, "I feel there's a certain wistfulness on the part of some older veterans. For them, it's the closing of an era. They feel if women experience Antarctica, it somehow cheapens what they do."

Cynthia McFee, who works for the federal National Oceanic and Atmospheric Administration, studied meteorology at the Pole. Like others, she had dreaded an Animal House environment. Instead, her toughest times were handling the loneliness.

"Coming to grips with male camaraderie was difficult at times," she says. "Twice I was totally excluded from the group; they just shut me out. I felt totally alone and sorry for myself. In fact, it freaked me out. I would have been much happier with another woman to talk to."

That problems—some quite serious—have arisen for some of the women is undeniable. All five who have spent a full year at the Pole portray themselves as victims of a constant stream of gossip—sometimes damaging, other times merely annoying.

To varying degrees, all five suffered bouts of loneliness, depression and other symptoms of cabin fever expected during prolonged isolation. These were leavened by toga parties, "sleaze nights," festive dinners and humorous theatrics. All the women but Dr. Raney, now a resident at Stanford University Medical Center in Palo Alto, Calif., joined the 300 Club, the South Pole's most exclusive society. When the outside temperature drops to 100 below, the station crew gathers in the sauna and turns it up to 200 degrees. After they're steamed pink, they race out to the ceremonial Pole marker—clad only in boots, hats and smiles.

"When everyone else was doing the 300 Club," Dr. Raney recalls, "I enjoyed the luxury of a two-inch bath and shaved my legs, the only time I could do that in the entire year."

For New Jerseyite Martha Kane—who, as a 22-year-old graduate of Swarthmore College, became the second woman in history to winter at the Pole—the experience was particularly trying. She had gone to the U.S. Amundsen-Scott South Pole Station to monitor cosmic ray experiments. In the cluster of small metal buildings huddled beneath a geodesic dome, she found life alien, drab and lonely. Boredom, tension, depression all set in. The lone woman amid 16 men, she found herself the target of much negative pressure, with some viewing her as an interloper who had insinuated herself into a male domain.

"They wouldn't accept her as an equal," says John Morrison, the station mechanic. "She was always the girl on their turf, and it made it tough for them to feel strong. They felt it was a pretty macho thing to be at the South Pole, and to find a frail young lady doing a job every bit as good as them was hard on their egos. They retaliated by picking on her."

Martha Kane recalls incidents she regards as coarse and insulting, especially when there was too much drinking at the base bar.

"I wasn't frightened," she says, "but I was disgusted, angry. I knew I couldn't leave, so I just quit crying and learned to hate them."

While Kane's experiences weren't typical, they do indicate the problems that await those—men and women alike—who accept the challenge of life in this dark and frigid wasteland.

Wintering over in Antarctica is an ordeal for even the most well-balanced—an inward time of testing played out in the most hostile environment on earth. Being a woman adds to and sharpens the difficulties.

But even those who had a tough time look back with fond memories—including Kane, now married and a graduate student at the University of Wisconsin in Madison.

"It was very hard," she says, "but overall, the positive experiences outweighed the negative. I'm glad I did it—glad I could prove myself—but I wouldn't want to go back."

Unpredictable magnetic poles

Of all the earth's peculiarities, one of the most perplexing is the behavior of the magnetic poles.

Even in Columbus's day, it was recognized that magnetic north did not identify with the geographic north pole. Because of this, navigation on the high seas relied primarily on astronomical observations, and nobody knew where the compass was really pointing to, except that it was somewhere vaguely north.

Now it is known that the earth's north magnetic pole lies in the Baffin Islands of Canada, a little north of Northwest Territories. This is nearly 800 miles from the geographic pole. In the southern hemisphere, the magnetic pole lies even farther from the geographic pole.

It would seem to the rational observer that the poles should be on exactly opposite sides of the earth, but they aren't. They wander around seemingly independently.

Anyone who uses topographic maps is aware of the corrections that need to be considered when using a magnetic compass. Over the greater part of Alaska, this correction varies from around 20-30 degrees, a relatively large amount compared with the rest of the world. In addition, there is a small annual drift. Worldwide, this averages about 0.2 degrees per year. Surprisingly, over most of Alaska, the annual correction needed is essentially nil.

Not only do the poles change their position, the magnetic field itself changes in strength. In the early 1800s, the field was about 6 percent greater than it is now. Around 1600 A.D., it was 50 percent greater, but 5,500 years ago it was only about one-half the present value.

But even these eccentricities in the poles' behavior pale in comparison with the flip-flop act which they perform every million years or so. With modern methods, it is possible to determine, within a few percentage points, how many years in the past individual volcanic rock flows solidified. At the same time, it is possible to determine, from the orientation of the minerals within the hardened lava, which magnetic pole represented north at the time, and which represented south.

That's right! They switch—a process called polarity-reversal.

Within relatively short periods of geologic time, probably less than 10,000 years, the magnetic field can reduce to a very small intensity and then re-establish itself with approximately equal intensity in exactly the opposite direction.

How it manages to do this is one of the great mysteries of modern science. It is now believed that the earth has had its present polarity for about the last 700,000 years, although there is evidence to suggest that a few very brief periods of polarity reversal may have occurred within that time.

What effect could field reversals have on living creatures? The rational answer would be: "It shouldn't have any." A human could stand in the strongest magnetic field ever made by man and never feel a tingle. On the other hand some recent studies indicate that bird migration paths may be influenced by the magnetic field.

In 1971, J.D. Hays of Columbia University suggested in the Geological Society of America Bulletin three ways in which magnetic field reversals might possibly influence some organisms, possibly leading to extinction. These were: (1) increased cosmic radiation during times of polarity reversal because of loss of the protective magnetic field; (2) a cause-and-effect relationship between reversals and climatic changes; and (3) actual interaction between organisms and the magnetic field.

As it stands now, there are no black-and-white answers to any of these speculations.—*Larry Gedney*

Sponsored by the Geophysical Institute of the University of Alaska

Antarctic Ice Pack Shrinks Dramatically

Knight-Ridder

Increased melting of sea ice has reduced the Antarctic ice pack nearly one million square miles since the early 1970s, two Columbia University scientists report.

The dramatic change, which has seen the edge of the summer ice pack retreat approximately 140 miles since 1973, could be the first physical evidence of the global warming trend that scientists have been predicting for years. They attribute the warming trend to the buildup of carbon dioxide and call it the "greenhouse effect."

If the shrinking ice pack signals a long-term change in climate, it could also cause a rise in sea level that could flood low-lying coastal areas of the world.

A group of 85 coastal and marine geologists headed by Dr. Orrin Pilkey, of Duke University, warned President Reagan earlier this month that the slow, inexorable rise of the sea level in recent years is posing some urgent problems for the future of low-lying, highly populated areas like the Florida coast.

In a cautiously worded report to the National Science Foundation, Dr. George J. Kukla, a senior research associate at Columbia's Lamont-Doherty Geological Observatory, and his assistant, Joyce Gavin, say that the relationship between the diminished ice pack and the buildup of carbon dioxide must still be considered "highly tentative."

Although the global increase in carbon dioxide has been well documented for years, scientists have had trouble linking that increase to climate changes, which occur naturally from season to season and year to year.

The Columbia scientists' findings, however, are consistent with a slow but perceptible increase in sea level that has been occurring throughout the world, about a half-inch a year during the 1970s.

Hero dog goes home to Nome

Shelburne, Vt. (UPI)—The stuffed remains of Togo, a Siberian husky sled dog credited with helping save Nome, Alaska, from a diphtheria epidemic in 1925, headed home for a hero's welcome yesterday after years in obscurity.

With a diphtheria epidemic threatening Nome in 1925, Leonhard Seppala, Alaska's greatest dog sled master, was dispatched for the 600-mile roundtrip to get life-saving serum. He chose Togo, his best race dog, to lead the team over some of the most treacherous ice packs in the region.

A SECOND SLED TEAM met Seppala before he reached Nome on the return trip to relieve the exhausted dogs and carry the serum back. For years the second team, led by a dog named Balto, was given credit for the heroism. **Feb. 19**

Canada Probes Arctic Ice to Back Claim to Ownership

By KEN MacQUEEN, *Associated Press*

ICE STATION CESAR, Arctic Ocean—Scientists at this desolate outpost less than 250 miles from the North Pole are probing one of the earth's least-known features and building evidence to support Canada's claim to a large chunk of the Arctic ice.

The government is spending more than $1.4 million on the project—both for scientific research and as part of a 5-year-old effort to exert sovereignty over the region. The Canadians hope to control the land in advance of any efforts by U.S. firms to exploit its unproven mineral resources, and as a hedge against Soviet activity in the area.

It still is not Canadian territory. But the red-and-white maple leaf flag, planted among the camp's 20 tents and prefabricated buildings, waves over a vista of ice—some flat, some buckled into pressure ridges—and snow that forms new designs with every wind.

The immediate goal of the scientific effort is to find out more about what lies below the base for the Canadian Expedition to Study the Alpha Ridge—known by its acronym, CESAR.

The Alpha Ridge is a jumble of undersea peaks and valleys stretching about 800 miles from Canada's Ellesmere Island toward the East Siberian Sea.

Hans Weber, a veteran Arctic explorer who is chief scientist on the expedition, says the research will determine whether Canada may lay claim to the range and any resources it may hold.

The Soviet Union has a permanent ice station about 180 miles farther west, but Weber says his primary interest is learning about the Alpha Ridge, which he calls an "enigma," rather than worrying about whose territory it might be.

"To tell you the truth, I don't give a damn," he said. "That's up to the lawyers to decide."

Law of the Sea

James Tanner, project manager for the Canadian Department of Energy, Mines and Resources, said in an interview in Ottawa that a claim would require strong evidence that the ridge is "a natural prolongation" of the continental shelf, not a free-standing mountain range.

Under the international Law of the Sea treaty—which was rejected by Washington but signed by Ottawa—Canada would have 10 years to apply to extend its offshore economic zone, currently 200 miles, out over the ridge.

Earlier this year, Canadian Forces soldiers began work on the camp by chopping and blasting a 1,600-yard runway out of the drifting pack ice.

Equipment, food and fuel was carried to the site by aircraft. Working with numbed hands in the 24-hour sunlight, scientists and support staff assembled their tents and unloaded more than 1,000 barrels of fuel.

Fourteen journalists spent three days at the ice station, observing science in slow motion. Bundled against 40-below temperatures, scientists struggle to keep sensitive equipment operating inside drafty tents heated by diesel stoves.

A team headed by Ruth Jackson, a geophysicist with the Bedford Institute of Oceanography in Nova Scotia, is hauling core samples through holes in the ice from the ocean floor more than 6,000 feet below.

They are exploding dynamite and firing air guns underwater, learning the characteristics and type of rock in the ridge by the way sound travels through it.

The findings will help determine if the ridge was formed by volcanic action, or in a buckling of the ocean floor, or—if Canada is fortunate—as an extension of the continental shelf. An answer is expected by fall.

Although the polar ice cap sits in isolation at the top of the world, scientists have found evidence that waters of the Arctic Ocean include a mixture of currents from the Atlantic, Pacific and other oceans.

Two groups of scientists have found low-level radioactive contaminants from other parts of the world and are using them to trace the currents.

Valery Lee, a chemical oceanographer from the University of Miami, is tracing samples of tritium, which entered the oceans in atmospheric testing of atomic bombs.

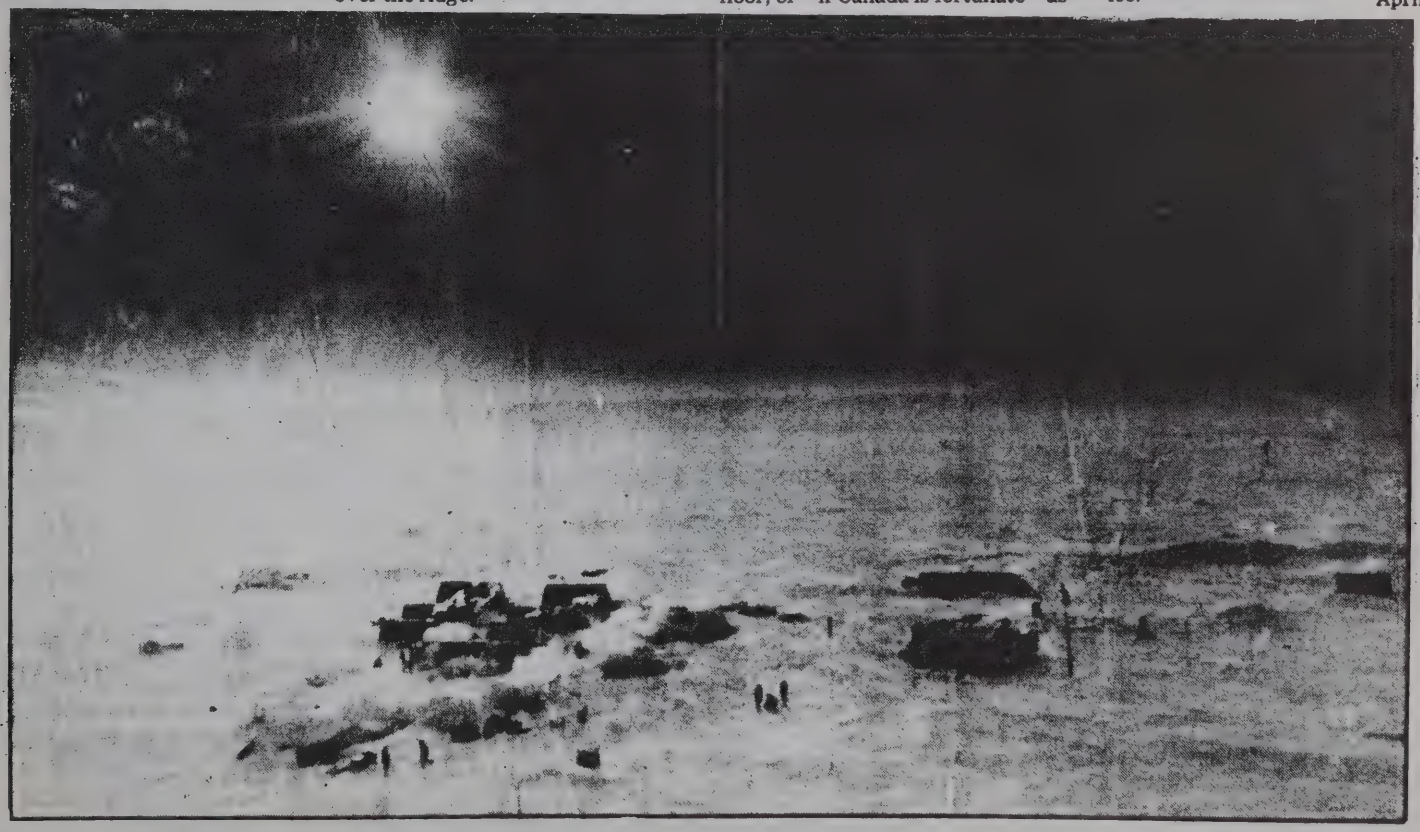
Robert Moore of Dalhousie University in Nova Scotia is searching for further samples of Caesium, which he found in water near the Pole four years ago.

Uranium Discharge

He believes the source is discharge from Britain's Windscale reprocessing plant where uranium is extracted from the spent fuel rods of nuclear reactors.

To the layman, perhaps the most familiar work is being done by Nick Prouse—also from the Bedford Institute—who is fishing through the ice.

April 28



Ice Station Cesar on an Arctic Ocean ice floe is 240 miles from the North Pole, above an underwater mountain range called Alpha Ridge.

Divers Find Old Ship Intact in the Arctic

WASHINGTON, May 26 (UPI) — Divers reached a 19th-century shipwreck 340 feet beneath the Arctic Ocean ice last month and one said today that the vessel "looked like you could sail it away."

The three-masted British ship Breadalbane sank Aug. 21, 1853, while on a fruitless search for Sir John Franklin, who disappeared with 128 shipmates trying to find the Northwest Passage.

The Breadalbane was stuck in the ice about a mile south of Beechey Island, 60 miles east of Resolute Bay and 600 miles north of the Arctic Circle. All 21 crewmen escaped before the ship sank.

The wreck was found by sonar three years ago by a team headed by Dr. Joseph MacInnis, a Canadian physician and Arctic diver. Ice conditions kept his team, which was supported by the National Geographic Society, from diving to the wreck until April.

Dr. MacInnis said at a National Geographic Society news conference that the wreck, the northernmost one yet found, was "in a remarkable state of preservation, probably the best preserved wreck found."

The ship's wheel was recovered and was on display in a water tub. Its rim, of either walnut or mahogany fitted around a circle of brass, was in excellent condition, but its cast-iron hub had corroded.

Divers using a one-man device called a wasp suit made four dives to the wreck. The wasp suit, so named because it resembles the insect, is somewhat like a one-man submarine with two arms with claws for hands and a large bubble head through which the diver can see. The device is powered by a 3,000-foot-long umbilical cord to the surface and has small propellers to help the diver move about.

Phil Nuytten, president of Can-Dive Services Ltd., was the first man to reach the wreck.

Mr. Nuytten said the ship appeared in "great shape." Two of its masts were still standing, the wheelhouse was intact and its two compasses were still mounted, he said.

"It looked like you could sail it away," Mr. Nuytten observed. "If you could somehow make the water vanish, you could probably repair it in a couple of weeks and sail it back to England. It looked great."

The New York Times / May 27, 1983

British ship sank in 1853 while on an unsuccessful search for a lost Arctic explorer.

Navy Trains to Battle Soviet Submarines in Arctic

By RICHARD HALLORAN
The New York Times

WASHINGTON, May 18 — Adm. James D. Watkins, the Chief of Naval Operations, disclosed today that United States submarines had begun extensive training under the Arctic ice to be ready in wartime to attack Soviet submarines armed with ballistic missiles that have increased operations there.

Admiral Watkins, the Navy's senior officer, also differed with Navy Secretary John F. Lehman Jr. over strategy, asserting that aircraft carriers should not go charging into waters near the Soviet Union in wartime, as advocated by Mr. Lehman.

In another matter, Admiral Watkins defended the Navy's newest missile, the Trident or C-4, which was criticized Tuesday for poor performance by the Pentagon's senior technical official, Under Secretary of Defense Richard D. DeLauer. Admiral Watkins said the missile had been successfully fired in 46 of 56 shots, or 82.1 percent, nearing the Navy's goal of 85 percent reliability.

In a meeting with reporters, Admiral Watkins also said the Navy planned to build a new class of attack submarines in the 1990's that would be bigger, faster, quieter and more lethal than today's Los Angeles class.

In preparing to hunt Soviet submarines, Admiral Watkins said, American attack submarines have increased their emphasis on operations under the ice. He said they had exercised extensively under ice at the edges of the polar cap, where it is about 10 feet thick.

In a nuclear exchange, the admiral said, missiles aboard submarines would most likely be a reserve force for the Soviet Union, with the submarines hiding beneath the ice until summoned to open waters to fire their missiles.

The admiral suggested, but would not confirm, that Soviet submarines had found a passage under the polar ice to firing positions north of Canada. The United States has radars looking primarily for missiles from submarines in the Atlantic and Pacific Oceans.

U.S. Has Avoided Ice

In contrast to Soviet operations, the admiral said United States submarines armed with long-range missiles rarely hid under the ice cap but rather roamed under 30 million square miles of ocean to escape Soviet detection. The nuclear missiles are part of the United States strategic deterrent force.

The admiral said submarine operations under the ice were difficult because of the noise of shifting ice, the shallow waters between the ocean floor and the bottom of the ice, and the inability of submarines to surface through thick ice if they get into trouble.

"You don't go charging around at max speed up there," Admiral Watkins said. But the United States has done extensive oceanographic surveys in the region and the Navy has sent scientists aboard submarines under the ice to improve the submariners' ability to operate there, he said.

On naval strategy, Admiral Watkins differed with Mr. Lehman's plan, expressed often in news conferences and Congressional testimony, to have aircraft carriers and their escorting vessels positioned so that naval aircraft will be within striking range of the Soviet Union.

While asserting that the aircraft carriers would not be sitting ducks for Soviet land-based aircraft, Admiral Watkins said he doubted the need for sending them into such waters. He suggested that submarines could do a better job of attacking the Soviet fleet in time of war while aircraft carriers helped to defend the sea lanes.

Admiral Watkins also noted that the Joint Chiefs of Staff, under the direction of the Secretary of Defense, work out strategy while the Secretary of the Navy "does not set strategy for forces in the field."

Mammoth Skull in Alaska

FAIRBANKS, Alaska, May 25 (UPI) — The well-preserved skull and tusks of a mammoth that died 15,000 years ago have been discovered near an Alaskan gold mine. "This is a very significant find," said Robert Thorson, an expert on glacial and geological science.

The blood vessels in a blue whale are so large that a fully grown trout could swim through many of them.

Multinational Ice Study Project to Begin

This summer will see the beginning of the most extensive research project ever undertaken to study the ice, water and air conditions in the Arctic seas between Svalbard and Greenland. The project, in which 100 researchers from nine countries will participate, will be led by the Norwegian oceanographer *Ola M. Johannessen.*

Drift ice forms an almost continuous cap over the seas between Svalbard and Greenland and has for many years been a mystery and a challenge to Arctic researchers. They have sought to interpret the influence of these huge ice masses on the weather systems of the Northern Hemisphere and to find out how the ice moves.

The new project, which has been given the name MIZEX (Marginal Ice Zone Experiment), will provide information on how the ice is affected by wind, currents, waves and warmth. The thickness and roughness of the ice will be tested, as well as what happens when the drift ice comes up against the waters of the warmer Atlantic current.

On its expedition to the ice this summer MIZEX will spend $4 million, an amount to be expanded to $8 million in 1984. Ice measurements will be taken all the way to 1990, and in the latter stages of the project the researchers will be assisted by space satellite photographs. While the researchers are on the ice four remote-analysis aircraft will measure systematically the movements of the ice in specific areas. The data from these measurements will be transferred to a telemetry station in Tromsø, which will transmit them back to the researchers on the ice.

* * * * *

An all-Norwegian expedition to the Antarctic will be launched in 1984-85. The expedition will be under the leadership of the Norwegian Polar Institute, and a scientific committee at the University of Bergen has been given the task of coordination planning. The coming expedition will build on the experience gathered by similar expeditions to Antarctica in 1976-77 and 1978-79.

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Two Against the Ice – Amundsen and Ellsworth by Theodore K. Mason portrays the relationship between the renowned Norwegian explorer Roald Amundsen and his American companion, Lincoln Ellsworth. Ellsworth followed Amundsen on several of his expeditions to the ice and provided the money Amundsen desperately needed to fund them. After Amundsen's death Ellsworth went on to become an important polar explorer in his own right. 192 pages. (Published by and available from *Dodd, Mead & Company, 79 Madison Avenue, New York, NY 10016.* Price: $13.95).

Water, water everywhere

NEW YORK (AP)—Our oceans contain 97 percent of the world's water, according to Rand McNally's "Great Geographical Atlas."

Of the remaining quantity, 2 percent of the world's water is locked up in the ice caps of Greenland and Antarctica, which leaves only 1 cent on the surface of the Earth, under the ground and in the air.

According to the atlas, the importance of that 1 percent, is, however, inestimable: most life forms could not exist without it, despite the fact that many are threatened by it in the form of storms and floods.

New Look at Northern Lights

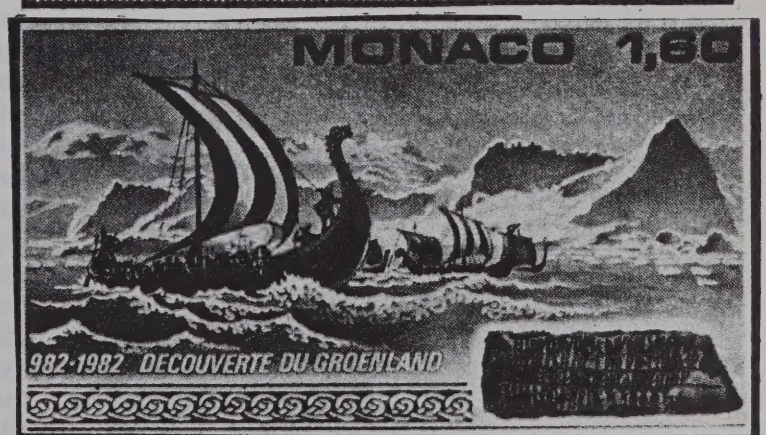
BALTIMORE June 20. (AP) — A television camera mounted on a satellite is expected to give scientists their first look at the ultraviolet sections of the Northern Lights, according to the project's directors at the Applied Physics Laboratory of Johns Hopkins University.

Dr. Thomas Potemra said the 250-pound satellite, to be launched June 27 from Vandenburg Air Force Base in California, will orbit above the aurora borealis, allowing the camera to shoot down into its ultraviolet region and send images back to the Earth.

"The television camera will be tuned to the special ultraviolet emissions instead of the visible wavelengths," said Dr. Potemra, the supervisor of the laboratory's space physics program.

The camera's revelations about the auroral zones' physical properties will be used by the Defense Nuclear Agency to learn how atmospheric disturbances caused by explosions affect the zones, Dr. Potemra said. Such explosions could disrupt military satellite communications in wartime.

The Northern Lights are luminous bands or streamers of light that sometimes appear in the night sky of the Northern Hemisphere.



Polar bear snacks on snowmobile seat

POINT BARROW (AP)—What do you feed a visiting polar bear who drops by your ice floe? A snowmobile seat will do, if nothing else is handy, the Coast Guard reports.

Scientists from the Seattle-based Coast Guard icebreaker Polar Sea had left their ship and were conducting ice studies near Point Barrow in the Arctic Ocean Thursday when a polar bear rambled into their temporary camp and started gnawing the seat of a snowmobile.

The Coast Guardsmen fired warning shots, flares, blew whistles and shouted through bullhorns, but the bear finished the seat and munched on miscellaneous other gear before departing unharmed, said Ed Moreth, a Coast Guard spokesman in Seattle.

The German Expedition at Clearwater Fiord 1882-83

By William Barr and Chuck Tolley

Professor Barr is with the Department of Geography, University of Saskatchewan, in Saskatoon. Chuck Tolley is principal, Attagoyuk School, Pangnirtung, N.W.T.

The Beaver/Autumn 1982 ©1982 Hudson's Bay Company

THIS YEAR IS THE CENTENNIAL of the First International Polar Year (1882-83) marking the transition from purely geographical exploration of the polar regions to a phase in which scientific research became dominant. Mention of this milestone in polar research tends to bring to mind recollections of the American expedition under Lieutenant Adolphus W. Greely to Fort Conger on Lady Franklin Bay, Ellesmere Island; of Lieutenant Lockwood's highest north record of 83° 24′ N, and of the retreat south by boat via Kane Basin to the dismal starvation camp at Camp Clay near Cape Sabine where seven emaciated survivors were rescued by the crew of the relief ship *Bear* on 22 June 1884.

In North America these events have tended to overshadow the full ambitious scope of the International Year, which involved a total of 12 scientific expeditions manned by scientists from ten participating countries: the Austrians on Jan Mayen; the British at Fort Rae; the Danes at Godthaab; the Finns at Sodankylä; the French at Cape Horn; the Germans at Clearwater Fiord, Baffin Island, and on South Georgia in the Antarctic; the Norwegians at Bosskop in North Norway; the Russians on Ostrov Sagastyr in the Lena delta and at Malyye Karmakuly on Novaya Zemlya; the Swedes at Mossebugten in Svalbard and the Americans at Point Barrow and at Lady Franklin Bay.

Of these various expeditions one which has, in particular, tended to be overshadowed by the Greely expedition, but which is of interest to Canadians, was the German expedition to Clearwater Fiord on Baffin Island.

The concept of the First International Polar Year was the brain-child of Lieutenant Karl Weyprecht of the Austro-Hungarian Navy, and was a direct consequence of his experiences as a member of the Austro-Hungarian expedition to Franz Josef Land, north of Russia, in 1872-74 on board *Tegetthoff*. It appeared to him that significant advances in arctic meteorology and in terrestrial magnetism, two areas of particular concern to him, could only be achieved by a full year's programme of synchronous observations from the widest possible network of stations in both polar regions.

Weyprecht first aired these views at a meeting of the Austro-Hungarian Academy of Sciences in Vienna in January 1875 and again at the meeting of the Association of German Naturalists and Physicists at Gratz in September of that year. From the first the concept received the complete support of Weyprecht's sponsor on the *Tegetthoff* expedition, Graf Hans Wilczek. By the spring of 1877, with the latter's co-operation, Weyprecht had prepared detailed plans of the type of programme he had in mind, and presented them to the International Meteorological Congress in the spring of 1879. The International Meteorological Congress strongly endorsed Weyprecht's plan and convened an International Polar Conference which met in Hamburg 1 October 1879. This conference, attended by nine delegates from eight countries, elected Dr G.B. Neumayer as president, a strong indication of the interest of the German scientific community. One proviso for the implementation of the programme was that a minimum of eight stations in the Arctic would be required to guarantee scientific success. Subsequent conferences followed at Bern in July 1880 and at St Petersburg in August 1881, by which time the general outline of the International Polar Year had been agreed upon and its implementation set for 1882-83.

Even at this late date, however, Germany's participation was far from guaranteed and no German stations are included in the list of 'certainties' released by the St Petersburg conference. This was not for lack of effort on the part of Dr Neumayer; thus, for example, in June 1881 he had presented a paper to the German Geographical Society in Berlin on the significance of magnetic research, the need for systematic polar research and the need for Germany to participate fully in the International Polar Year. Finally, in late November 1881 the German government decided to participate and appointed Dr Neumayer to take charge of Germany's contributions to the programme. Since the International Polar Conference had stipulated that the programme of observations at all stations of the International Polar Year must begin on 1 August 1882, there was little time to lose.

A German Polar Commission under Dr Neumayer's chairmanship met in mid-December 1881. Among its first decisions were that Germany should mount two major expeditions: to Baffin Island and South Georgia, and a supplementary one to the Labrador coast.

It was initially suggested that in view of the large number of arctic stations to which other countries were already committed, Germany should perhaps locate both her stations in the southern hemisphere. However the logistic difficulties of placing a station in the High Antarctic decided the issue. The choice of site within the northern hemisphere was narrowed by considerations

such as a desire to locate one station as close as possible to the North Magnetic Pole (bearing in mind that the American station at Lady Franklin Bay and the British station at Fort Rae were the closest thus far), a desire to achieve as complete a circumpolar circle of stations as possible and, naturally, by logistic considerations. At first there were fears that Cumberland Sound might prove unsuitable due to ice conditions; but on the basis of information solicited from the British Admiralty it was decided that, from the past experience of the whalers, the chances of gaining access to Clearwater Fiord were sufficiently good in most years that occupation of a site on that fiord, practically on the Arctic Circle, was feasible.

The selection of the expedition personnel was obviously a matter of great urgency, and was tackled as a priority item. The composition of the Baffin Island party, as summoned to Hamburg in early April 1882 to participate in final preparations, was as follows: leader was Dr W. Giese; deputy leader and astronomer was Dr Leopold Ambronn of the Chronometric Institute of the German Naval Observatory; medical officer and botanist was Dr W. Schliephake from Würzburg; K. Boecklen from Esslingen was appointed expedition engineer and draughtsman; mathematician and physicist H. Abbes from Bremen joined the expedition as an assistant although he would make some extremely useful ethnographic contributions; expedition mechanic was H. Seemann from Hamburg; and finally, in terms of the scientific and technical personnel, Dr Ludwig Rösch from Oettingen was appointed meteorologist. The support staff consisted of six men.

The ship selected for transporting the expedition to Clearwater Fiord was *Germania*. Built in Bremerhaven in 1869 for the Second German Polar Expedition to East Greenland under Captain Karl Koldewey, she was a wooden sailing vessel, sheathed in iron, 90 feet long, beam 22½ feet and of 143 registered tonnes. Originally she had been equipped with a steam engine but this had been removed. In the view of her master, Captain Mahlstede, the lack of an engine was not a matter of great consequence; this optimism would turn out to be misplaced in terms of the conditions the ship was to encounter in both her attempts to reach Clearwater Fiord.

Loading began in Hamburg harbour in early June 1882 and proceeded steadily. But then an accident occurred which must have cast a shadow over the entire enterprise. Dr Rösch, the meteorologist, slipped and fell on board the ship, and died from his injuries on 23 June. Within days A. Mühleisen from Esslingen was appointed to replace him, with special responsibilities as ship's navigator on the voyage to Baffin Island.

By this stage the ship was fully loaded; the space left for the expedition personnel was considerably less than generous. Bulky items such as the prefabricated units of the various huts had to be stowed on deck, so there was little space on deck for the expedition members to exercise or for the crew to work the ship. There must have been some concern expressed that the ship might be overloaded since one of the last events prior to her sailing was an inspection of the deeply laden vessel by a three-man party of experts, among them Captain Koldewey. They were satisfied as to the ship's seaworthiness.

A hundred years ago, German scientists were taking hourly meteorological and magnetic readings at Clearwater Fiord, Baffin Island. Their contribution to the first International Polar Year was an unbroken record of observations over a period of 359 days.

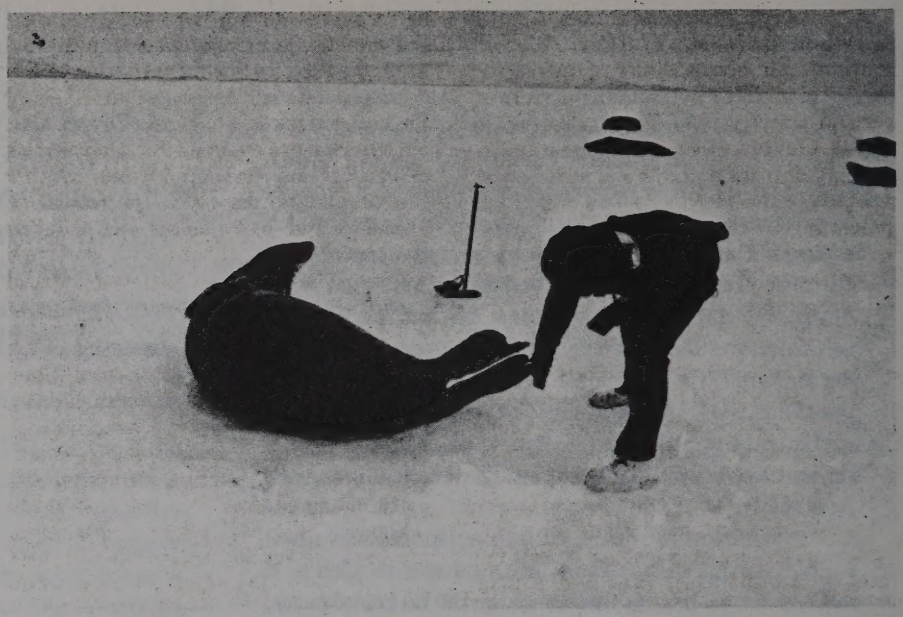
Germania finally put to sea from Hamburg on the morning of 27 June 1882. Passing well south of Kap Farvel, on 27 July she encountered her first ice towards the west side of Davis Strait. A prior warning had been given by a sharp drop in the water temperature from about 7.2 ° to 3.8 ° C. After the ship had been sailing for several days through loose ice, on 1 August Cape Mercy at the south-east tip of the Cumberland Peninsula was sighted. To the west of it, however, a solid barrier of ice blocked the entrance to Cumberland Sound; the west coast of the sound in the vicinity of Cape Edwards and Harrison Point loomed as a low, grey strip on the horizon.

The next two weeks tried the patience of everyone on board. With prolonged calms or, at best, with fickle breezes, Captain Mahlstede took advantage of every possible sign of weakness in the ice, but the barrier remained closely packed. Several attempts at pushing through the ice ended in back-breaking hours of towing with the boats to get the ship back to safety as the floes closed ranks again under the influence of the tides.

On 13 August, with the provisions assigned for the voyage running low, and the official starting date for the observing programme of the International Polar Year already past, there was serious discussion on board about abandoning Cumberland Sound and heading for Upernavik instead, an eventuality covered by the expedition's instructions. But on the 14th the ice began to loosen and *Germania* was able to make steady progress into Cumberland Sound. As the day progressed, in warm, sunny weather a wide lane of water opened under the influence of a fresh north-easterly wind. On the last lap, up the length of Cumberland Sound, progress was still not entirely smooth, however; long periods of calm, and still significant amounts of ice had to be tackled. Ultimately, *Germania* dropped anchor off Kekerten on 17 August.

U. S. Navy photo (XAM-0468-D-12-80) by Harry Weddington.

Ice cores and algae samples from the fresh water lakes of southern Victoria Land have provided biologists with new insights into the ecology and geochemistry of these ancient lakes. Above researchers from Virginia Polytechnic Institute and State University retrieve a core from Lake Bonney in Taylor Valley.



NSF photo by Russ Kinne.

Ward Testa of the University of Minnesota tags a Weddell seal on the sea ice near McMurdo Station. Sonic tags enable scientists to track seals swimming under the ice and moving in and out of McMurdo Sound. Receiving stations have been installed around McMurdo Sound so that long-term data on seal movements can be obtained.

A U. S. Navy UH-1N helicopter lands in Wright Valley, one of the ice-free valleys of southern Victoria Land. Helicopters are used not only to transport personnel but also to bring food and equipment to field parties near McMurdo Station.